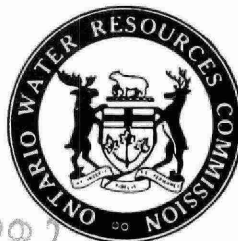


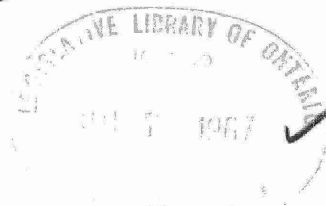
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EV. 506

R2002



Research paper 2002



PROPOSED PROCEDURE FOR DETERMINING
QUANTITY AND QUALITY OF STORM FLOW

DIVISION OF RESEARCH
ONTARIO WATER RESOURCES COMMISSION

January, 1966

R.P. 2002

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PROPOSED PROCEDURE FOR DETERMINING
QUANTITY AND QUALITY OF STORM FLOW

By:

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January, 1966

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The Ontario Water Resources Commission

DETERMINING QUANTITY AND QUALITY OF STORM FLOW

Purpose

Storm flow, particularly in separate storm sewers, is generally considered to be composed chiefly of run-off rain water and therefore treatment is not required. There is some doubt that this premise is correct as storm run-off water, particularly in the early stages of a storm, undoubtedly contains a large amount of organic material washed off streets. The purpose of this investigation is to provide adequate data on quantities of storm water and polluttional load.

Result Required

Flow rate per unit area (gpm/acre)

Polluttional load (BOD, Susp. Solids, - ppm)

General

Storm flow will, of course, occur only during and following rainfall, and melting conditions during periods of snow cover. Rainstorms of low intensity - short duration will not contribute either large quantities of water, or high organic loading in that the quantity of water will not be sufficient to flush roadways and streets. Short duration,

high intensity storms will cause large volumes of highly polluted water to reach the storm sewers. Storms of moderate intensity and long duration will initially contribute a highly polluted quantity of water to the storm sewers and in the later stages of the rainfall will contribute a large volume of water with a lower pollutional load.

It is the intention of this investigation to determine the correlation between rainfall intensity and duration with storm flow, and the quality of storm water with duration and volume.

Suggested Methods

In order to accomplish the intent of the investigation, it is necessary to measure volumes of flow and to produce representative samples for sanitary analysis. Samples should be taken at a point to which the contributory area may be determined.

1. Storm sewer outfall:

A recording flow meter (of a type similar to the Penn meter, style X701 MH flow recording system) may be

installed in the last manhole prior to discharge. A continuous sampling device (e.g. submersible pump with timer operation) should be installed at the same point, and composite samples of no more than two hour period obtained. A rainfall gauge should be installed in the catchment area and precipitation recorded at hourly intervals, (as inches/hour).

Sampling should begin immediately upon rainfall and continue until flow becomes negligible.

2. Catch basin

The same procedure as outlined above may be used in a limited area (e.g. a cul-de-sac or deadend street). Recording devices will be necessary operate in a lower range and small variations in local conditions will produce large variation in the result.

Reporting Results

In the interests of providing test results which will be of value to all municipalities concerned, it is desirable to have a uniform method of reporting. The use of the attached graphical form is suggested.

STORM FLOW SAMPLING

MUNICIPALITY
 DATE
 SAMPLE LOCATION

DRAINAGE AREAAC.
 STREETS%
 BLDGS.%
 GRASS%

RAINFALL - IN/HR

STORM FLOW - GPM

BOD - SUSP. SOLIDS - PPM

TIME - HOURS



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